



MIDWESTERN INSTRUMENTS

41st AND SHERIDAN ROAD, P. O. BOX 1526, TULSA, OKLAHOMA 74101

PHONE 918-627-1111
TWX 918-627-6030
TELEX 049 589

24 May 1967

Mr. T. Nelson
Box 1546
Poughkeepsie, New York 12603

Subject: Series/M4000 Digital Tape Transport Inquiry

Dear Mr. Nelson:

Thank you very much for your interest and inquiry concerning Midwestern's M4000 digital tape transport system.

Enclosed for your review is an introductory brochure describing the Series/M4000 in outline form and indicating the versatility and wide range of applications in tape speed, data format, recording density, and systems interface. In addition to basic tape transport features, the M4000 also incorporates optional time sharing and expanded system features in master/slave configurations. These standard optional packages can be selected as basic building blocks to custom tailor a transport system to precisely match your interface requirements.

In addition to the brochure, we are also enclosing a follow up questionnaire and return envelope for your convenience in requesting more information or preparation of a specific proposal for immediate requirements. If you wish, our local representative will be more than pleased to arrange a technical conference for a detailed presentation on the M4000 features, performance, and versatility. For this purpose, please contact:

OSSMANN INSTRUMENTS
101 Pickard Drive
Syracuse, New York 13211

315-454-2461

The standard M4000 is fully compatible with IBM tape formats in both seven and nine channel configurations. All units are delivered prewired for future field conversion to IBM nine channel, 2400 series, tape format. Thank you again for your interest in Midwestern. We look forward, with great pleasure, to serving you and your transport requirements.

Very sincerely,

MIDWESTERN INSTRUMENTS, INC.

Ralph P. Bohn
Sales Manager
Digital Tape Products Division

Data Processing
March 1967

DE 2017



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PHONE 918-627-1111
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Dear Mr. Bohn:

I would appreciate receiving more information on Midwestern's M4000 digital tape transport.

- ☐ Please send detailed specifications.
- ☐ Please have your representative call with detailed information.
- ☐ Please call me from Tulsa at your earliest convenience.
- ☐ Please put me on your permanent mailing list for information on digital tape transports.

PLEASE SEND INFORMATION TO:

Name _____ Title _____

Department or Mail Code _____

Company _____

Address _____

City _____ State _____ Zip _____

Phone: Area Code _____ Number _____ Extension _____

I have an immediate requirement for more information. My transport application is described as follows:

SYSTEM ☐ On-line with our in-house design computer system.
CONFIGURATION ☐ On-line with our in-house design data reduction system.
☐ Off-line data gathering, etc.
☐ On-line with IBM System, IBM Model _____*
☐ Other _____

TAPE ☐ 1/2" - 7 Track (IBM 729 compatible)
FORMAT ☐ 1/2" - 9 Track (IBM 2400 compatible)
☐ Other _____

OPERATING Tape Speed _____
CHARACTERISTICS Data Density _____

TRANSPORT ☐ Single unit control per data channel.
CONTROL ☐ Multiple control with shared data channels.
AND DATA Number of Shared Channels: ☐ One, ☐ Two **
INTERFACE Number of Transports: _____ (Up to Eight, Standard) **

QUOTATION ☐ Please prepare a quotation based on the following.
DATA Number of transports _____ or systems _____.
Delivery required _____.

~~**NOTE: Midwestern readily does not offer this capability, but is interested if you are.~~

**NOTE: Expanded systems available on special quotation.

MIDWESTERN

DIGITAL TAPE PRODUCTS DIVISION

M4000

M4000

DIGITAL TAPE TRANSPORT



■ OPERATOR CONTROLS

Backlighted pushbuttons and indicators for basic controls, options, and status features.

■ TRANSPORT ELECTRONICS

Front access through hinged control panel. Modular logic circuits for system options.

■ QUICK ACTION REEL HUBS

Minimize operator time for tape changeover. IBM hubs standard. NAB hubs available.

■ RIGID TAPE DECK CASTING

Stress relieved and precision machined for positive alignment of all transport elements.

■ STRAIGHT LINE TAPE PATH

Clears head, guides, and capstans for both tape threading and during high speed rewind.

■ INTERLOCKED COVER DOOR

Prevents transport operation with tape deck exposed for threading convenience and safety.

■ UNIT HEAD CONSTRUCTION

Combined read/write head and reference edge tape guide assembly for precision alignment.

■ DATA SYSTEM ELECTRONICS

Front access, modular circuit assemblies for flexibility of data electronics and interface.

■ RIGID CABINET FRAME

Welded aluminum box extrusion basic frame. Sound insulated cover panels and rear door.

■ PROPORTIONAL SERVO SYSTEM

Program freedom at all speeds and rates plus uniform reel packing and minimum tape jitter.

■ ADDITIONAL CARD MOUNTING

Up to three bays with thirty card positions available for special options and interfaces.

■ VACUUM COLUMN DOORS

Snap open full length doors provide direct vacuum column access for operator cleaning.

■ RECESSED BASE CASTERS

Retractable, full swivel casters and jack screw leveling pads mounted in frame base.

TAPE SPEEDS	M4000-1.....	121-150 inches per second.
	M4000-2.....	91-120 inches per second.
	M4000-3.....	51- 90 inches per second.
	M4000-4.....	25- 50 inches per second.
MULTIPLE SPEED OPTION		2:1 ratio standard. Other ratios available.
SPEED ACCURACY		Within 1% of nominal at rated line frequency.
SPEED STABILITY		±2% long term, measured over 1 second periods.
		±1% short term, over 5 millisecond periods.
START TIME		Less than 3.5 milliseconds.
START DISTANCE		0.150 inches, nominal, at 150 inches per second.
STOP TIME		Less than 3.0 milliseconds.
STOP DISTANCE		0.300 inches, nominal, at 150 inches per second.
START PLUS STOP DISTANCE		0.450 inches, maximum.
BASIC LOCAL CONTROLS		POWER ON, POWER OFF, FORWARD, REVERSE, CLEAR, REMOTE, LOAD/REWIND, UNLOAD, AND BRAKE RELEASE.
BASIC LOCAL INDICATORS		LOAD POINT AND WRITE PERMIT.
OPTIONAL LOCAL FEATURES		Address Select and Indicator, Speed Select, Two and Three Density Select, Manual Write Permit, and End of Tape Indicate.
BASIC REMOTE INPUTS		FORWARD, REVERSE, REWIND, UNLOAD, WRITE ENABLE, and RESET.
BASIC REMOTE STATUS		READY, LOAD POINT, END OF TAPE, WRITE ENABLED.
SERVO PROGRAM RESTRICTIONS		None, at all tape speeds, bidirectional operation.
COMMAND INPUT RATES		500 commands or 250 blocks per second in continuous operation.
COMMAND DURATION		2 millisecond minimum go and stop times.
COMMAND DROP RECOVERY		200 microsecond maximum forward or reverse command drop, without motion loss, for full speed gap traverse.
TAPE GUIDANCE		Spring loaded to IBM reference edge, symmetrical in forward and reverse direction.
INTERCHANNEL TIME DISPLACEMENT		2.5 microseconds total at 150 ips, bidirectional.
HEAD CONFIGURATION		7 or 9 channel IBM, interchangeable mounting. Erase optional.
REWIND OPERATION		Tape withdrawn from columns and head in high speed zone, with automatic low tape sensing, reloading, and load point positioning.
UNLOAD OPERATION		Automatic reverse drive and stop with all tape on supply reel. High speed zone sequence same as REWIND.
REWIND/UNLOAD SPEED		80 seconds for full 2400 foot tape reel.
TAPE REEL MOUNTING		IBM quick action hubs. NAB available.
TAPE THREADING		Straight line, reel to reel, without interference.
TAPE LOADING		Automatic column loading and load point positioning.
WRITE RING SENSOR		Automatic retraction, non-contact during operation.
LOGIC LEVELS		Standard — 0 volts False, minus 6 volts true. Optional — Inverted logic and positive voltage levels.
LEVEL INPUT/OUTPUT		2 microseconds minimum duration.
PULSE INPUT/OUTPUT		2 microseconds nominal, ± 25% at 90% amplitude.
ELECTRONICS PACKAGING		All solid state, modular design, plug-in circuit boards.
INTERFACE CONNECTIONS		Recessed rear input panel with AC power input, system interface connectors, and convenience outlets.
COOLING SYSTEM		1000 CFM, filtered, positive pressure, top intake.
DIMENSIONS		Height 71 inches. Width 31 inches. Depth 31½ inches.
WEIGHT		750 pounds maximum, transport in cabinet.
OPERATING TEMPERATURE		40 to 100 degrees Fahrenheit.
OPERATING HUMIDITY		30 to 80 relative humidity, without condensation.
POWER REQUIREMENTS		115VAC, 50 or 60Hz, single phase, 3KVA maximum load.
SAFETY INTERLOCKS		Fully interlocked AC and DC power, pressure, vacuum, and tape motion command logic.

FEATURES

the series/M4000 digital tape transport offers . . .

SUPERIOR TAPE HANDLING with positive pressure pneumatic drive for controlled motion, positive stop, tape speed stability and minimum dynamic tape stress under all program conditions.

GUARANTEED DATA RELIABILITY with less than one transient data error in 10^9 data bits, factory tested under random program and data conditions.

FULL IBM COMPATIBILITY with 7 or 9 channel formats, single or multiple density up to 800 bpi NRZI, and full gap control under all program conditions.

COMPLETE PERFORMANCE RANGE from 25 to 150 ips, single or dual speed, with common interface and modular design for all tape speeds, densities, and formats.

FIELD CONVERTIBILITY between 7 and 9 channel tape formats with simple plug-in modules, plus field modification of tape speed and data transfer rates.

OPERATOR CONVENIENCE with straight-line threading, quick action hubs, automatic load and unload, and IBM identical reel mounting and tape path configuration.

SYSTEM DEPENDABILITY by elimination of high impact mechanisms and critical adjustments, plus fully derated components and proven digital logic design.

SIMPLICITY OF MAINTENANCE with complete plug-in designs, full front access, minimum adjustments, and simple operator access for periodic cleaning.

plus full system flexibility in control and data electronics . . .

BASIC, MASTER, AND SLAVE transport configurations with options for parallel bus operation and shared data electronics on up to eight transports with Select Control.

OPTIONAL CONTROL FEATURES including Address Select Switch, Two and Three Density Select, Manual Write Permit, Special Indicators and Programmable Control Toggles.

BASIC DATA ELECTRONICS including standard and high density write circuits and buffered,

deskewed, and strobed read output in both forward and reverse motion, with switchable skew correction by density and tape speed.

OPTIONAL DATA FEATURES including odd/even selectable Lateral Parity Checking, Gap Detection, LRCC Parity Checking, and End of File Detection.

SPECIAL INTERFACE CONFIGURATIONS including Micrologic compatibility, inverted levels and functions, and special features adapted to user system requirements.



**MIDWESTERN
INSTRUMENTS**
SUBSIDIARY OF THE TELEX CORPORATION

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